IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	Group Art Unit: Unknown
Kenneth Johnson et al.	Examiner: Unknown
Application No.: NEW	**PRELIMINARY AMENDMENT**
Filed: HEREWITH	121 Spear Street, Suite 290 San Francisco, CA 94105 (415) 512-1312
For: METHOD OF MEASURING MESO-SCALE STRUCTURES ON WAFERS	

M/S PATENT APPLICATION
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Prior to Examining the above-identified application, please enter the following amendments:

Amendments to the Specification begin on page 2 of this paper.

Amendments to the Claims are reflected in the listing of claims which begins on page 4 of this paper.

Remarks begin on page 5 of this paper.

Amendments to the Specification:

On page 1, line 5, please delete the paragraph entitled "Cross-Reference to Related Applications."

Please replace that paragraph with the following paragraph:

--Priority

This application is a continuation of U.S. Patent Application, 09/999,410, filed October 21, 2001, which is in turn a continuation of U.S. Patent Application No. 09/735,286, filed on December 11, 2000. This application also claims priority to Provisional Applications Serial Nos. 60/172,851 filed December 10, 1999 and 60/194,651, filed April 4, 2000, both of which are incorporated herein by reference.--

Please replace the paragraph beginning on page 32, line 19 with the following rewritten paragraph:

--With reference now to FIG. 22, there is shown a wafer polishing and measurement system 200 comprising a measurement unit 210 arranged adjacent a wafer stage 220 having an upper surface 224 capable of supporting a wafer W having an upper surface 230. Measurement unit 210 is fixed to a stage 232 capable moving in the X-Y plane in response to an electronic signal. Wafer stage 220 is preferably in operable communication with a drive motor 234 capable of causing rotation of the wafer stage in the X-Y plane about an axis A3 as indicated by arrow 235. Stage 232 is capable of moving wafer W with respect to measurement unit 210 in two dimensions, or vice versa or, move the wafer in one dimension and measurement unit 232 in another. The dimensions of motion could be Cartesian (X and Y) or cylindrical (R and $\underline{\theta}$). In a preferred embodiment, stage 232 as shown in FIG. 4 provides primary motion in a radial direction R parallel to the X direction, and drive motor 234 provides rotary motion measured by angle $\underline{\theta}$. Stage 232 also provides auxiliary motion in the Y direction to calibrate the motions. The primary calibration requirement is that the measurement spot of measurement unit 210 on the wafer passes through axis of rotation A3. The orientation of the measurement system with respect to system 200 and to world coordinates (e.g., "up" and "down"), as used above and in the following description, are for illustrative clarity only. For example, system 200 could be inverted or rotated by 90 degrees.--

Please replace the paragraph beginning on page 33, line 14 with the following rewritten paragraph:

--Measurement unit 210 may be a reflectometer assembly for measuring reflectivity (or a related property) of wafer upper surface 230. An exemplary reflectometer assembly is described in U.S. Patent Applications Ser. Nos. 60/125,462 and 60/128,915, which are incorporated by reference herein. Another exemplary [reflectormeter] reflectometer is shown in FIG. 21a, above. Measurement unit 210 may also be an ellipsometer capable of determining the phase difference Δ between the parallel (Rp) and perpendicular (Rs) components of a light beam that has been elliptically polarized by reflection from wafer upper surface 230, while at the same time uniquely determining the ellipsometric parameter ψ of the elliptically polarized beam. Such ellipsometers are described in U.S. Pat. Nos. 4,053,232 and 5,166,752, which patents are incorporated by reference herein. Other suitable measurement units include a polarized reflectometer, such as described in the article by M. E. Lee, C. Galarza, W. Kong, W. Sun, and F. L. Terry, Jr., "Analysis of Reflectometry and Ellipsometry Data from Patterned Structures," International Conference on Characterization and Metrology for ULSI Technology, Gaithersburg, MD, Mar. 23-27, 1998, AIP Conference Proceedings 449, pp. 331-5 (1998), or a beam-profile reflectometer, such as described in U.S. Pat. No. 4,999,014, or any other reflectometer that measures the reflected intensity as a function of angles of incidence and reflection. Furthermore, combinations of such instruments would be suitable measurement units. In the latter case, the reflection properties described above would be combinations of data acquired by the component measurement systems.--